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A study on pig cum fish integrated farming in Kamrup (R) district of Assam

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Abstract

A field trial was conducted during 2018 and 2020 on pig cum fish farming at Livestock Research Station, Mandira during 2018 and 2020. The results were found encouraging. Net income of pig cum fish farming was Rs.1, 21,700.00 and Rs. 1, 49,200.00 during 2018 and 2020 respectively. High net return was found in 2020 due to the higher market price of fish as well as pork. The pig dung act as excellent pond fertilizer and raises the biological productivity of the pond and consequently increases fish production. No supplementary feed is required for the fish culture, which normally accounts for 60 percent of the total input cost in conventional fish culture. Pig excreta help in fertilizing the pond water and produce the fish food organism like phytoplankton and zooplankton. Apart from this, some of the fishes like Common carp take pig dung directly as their feed. The economic returns are good enough for the small farmers of this locality. The B:C ratio was 3.36:1 from the two years experimentation.

Keywords: fish polyculture, pigs, B: C ratio, net return

Introduction

The integrated farming system includes combinations of fish polyculture integrated with crop or livestock production. Pig manure contains about 70% of digestible food for fishes besides certain digestive enzymes. It also contains all the essential nutrients required for the growth of plants, and hence, allows the growing of planktons; which are ultimately used by fishes as natural food. Integration occurs when outputs of one production system are used as 'Inputs' by another system within the same unit. The pond system transforms the inert nutrients of the manure into digestible protein rich live food (Phytoplankton and Zooplankton) for the fishes. No supplementary feed is required for the fish culture and this leads to a substantial reduction of operating costs since fish feed normally accounts for about 60% of the total input cost in conventional fish culture (Tripathi and Sharma, 2005) [3].

In Assam and northeast India, pork is in very high demand and there is no religious taboo with eating it. Pigs are easily adaptable to the climatic conditions of the northeast. Moreover, higher feed conversion efficiency, high fecundity, shorter generation interval, etc are the other benefits of pigs for integration with fish. This system provides about 3,000- 4,000 kg fish /ha/year, 4,500 kg /pig meat / ha /year and 800 numbers of piglets (Sankhayan, P.H.1998) [2].

Hence, keeping in view these facts, an experiment has been undertaken to study the profitability of pig cum fish integrated farming system in Kamrup district (R) of Assam, aiming at assessing the economic return along with cost benefit ratios.

Materials and Method

The study was undertaken at Livestock Research Station, Assam Agricultural University, Kamrup (R) district of Assam. Three numbers of Sows and one Boar were reared in a pig house adjacent to a pond during the years 2018 and 2020. Each sow produced 8-9 nos. of piglets during the experimental period and hence, total of 24 numbers of piglets were recorded each year for this study. Half of the (50%) piglets were castrated and the rest (50%) sold @ Rs. 2,200/- only per piglet in 2018 and @ Rs. 2,500/- only per piglet in 2020. All the sows (3no.s) were also sold after the completion of the experiment in 2018 and 2020. Pigs were reared as per the standard managerial practice. Fingerlings of four carp species viz; Rohu, Catla, Mrigal and Grass carp were released in the adjacent pond of the pig farm and records were taken for 6 -7 months period. The area of the pond was 1333 sq m with a rectangular shape. The stocking density per unit area for Catla, Rohu, Mrigala and Grass Carps were 280, 225, 225 and 270 numbers respectively.

Final stocking density was recorded after 5% mortality of individual species. All fingerlings were released in the month of April and were harvested in the first week of October 2018 and 2020. Gross returns, net profit and cost benefit ratios were calculated.

Result and Discussion

Stocking density after 5% mortality rate of different carp species was recorded as 266 (Catla), 214 (Rohu), 214 (Mrigala) and 256 (Grass carp) numbers. All carp fishes were harvested during September and sold at an average market price @ Rs. 200/- per kg. Highest Gross return was recorded from Catla, followed by Grass carps, Mrigala and Rohu (Table-1). The percent growth rate recorded in the study was 18.50%, 18.04% in the case of Catla and Grass carp and

lowest being recorded was Rohu (10.71%). The highest marketable size has recorded in case of Catla fish (Table-2) and lowest marketable size was recorded in case of Rohu (Table-2).

Out of the 24 piglets, 12 were sold and another 12 castrated and later on, pork was sold out at a reasonable market price (Table-3). Rs. 1, 21,700.00 and Rs. 1,49,200.00 lakhs were received during the year of 2018 and 2020 respectively from the pig farming (Table-4) Net income in respect of pig unit and the fish unit has been summed up and total income as pig cum fish farming has been evaluated as Rs. 6,69,060.00. Lime applied @ 100 kg/ha to bring the water pH to 5.1 - 6.0. Total of 135 kg lime was applied during March-April in the fish pond each year. The benefit cost ratio was recorded as 3.36:1 during the experimental periods of 2018 and 2020.

Table 1: Fish stocking rate, Initial and Final weight (gm/unit) and Net income

Sl. No.	Carp Species	Stocking density/unit area	Stocking density after 5% mortality rate	Productivity (kg/unit area)	Gross income (Rs. / Bigha)	Net income (Rs. /Bigha)
1	Catla	280	266	492.10	98,420.00	Sold all carp spps @Rs. 200/- per kg. 1,99,080/-
2	Rohu	225	214	224.70	44,940.00	
3	Mrigala	225	214	342.40	68,480.00	
4	Grass carp	270	256	448.00	89,600.00	

Table 2: Growth of released carp species

Sl. No.	Carp Spps.	Fingerling wt (gm) at releasing time	Final wt. (gm) of carps at Harvest	% of increased growth
1	Catla	100	1850	18.50
2	Rohu	98	1050	10.71
3	Mrigala	100	1600	16.00
4	Grass carp	97	1750	18.04

Table 3: Sold price of piglets and castrated adult pigs

Years	Sold price of 50% piglets (Rs.)	Sold price of 50% castrated adult pigs (Rs.)	Gross returns (Rs.)	Expenditure (Rs.)	Net return (Rs)
2018	@Rs. 2,200/-x12 =26,400	70 kg pork per adult @2,20/- per kg =1,84,800.00	2,11,200.00	89,500.00	1,21,700.00
2020	@ Rs. 2,500/- x12 =30,000.00	70 kg pork /adult @ 2,80/- per kg =2,35,200.00	2,65,200.00	1,16,000.00	1,49,200.00

Table 4: B:C ratio and Net income

Net income of carps (Rs/Bigha) in two years	Net income of pigs (Rs./Bigha) in two years.	Total Net income under the IFS model (Rs./Bigha)	B:C ratio
1,99,080.00x2 years =3,98,160.00	2,70,900.00	6,69,060.00	3.36:1

* Cost on the preparation of fish pond was exempted in this calculation.

Conclusions

It can be concluded from the study that, in the integration of fish with pig farming practices, supplementary feeding to the cultured fish is not required. One Small farmer can earn upto Rs. 3, 34,530.00 in a year. Hence, the small or medium farmers may be encouraged to undertake such ventures with a good net profit.

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